AMENDMENTS TO THE SPECIFICATION:

Please amend the indicated paragraphs of the specification in accordance with the amendments indicated below.

Pages 11 and 12, paragraph bridging same:

FIG. 1 is a transverse sectional view of a vane rotary expander according to a first embodiment of the present invention. The reference numeral 21 denotes a cylinder having a cylindrical inner wall 21a. The cylinder also has side plates ~~(not illustrated in the figure)~~ 60 (a forwardmost one being shown cutaway) disposed at ~~its top and bottom~~ ends. Inside the cylinder 21, a cylindrical rotor 23 is disposed, and an outer circumferential segment of said cylindrical rotor 23 defines a small clearance 22 together with the inner wall 21a of the cylinder 21. The rotor 23 has grooves 23a formed perpendicularly to its top and bottom end surfaces at an interval of 90 degrees. Vanes 24 are inserted into the grooves 23a at the respective ends thereof so as to be freely slidable, and the other ends of the vanes 24 are in contact with the inner wall 21a of the cylinder 21. An operating chamber 25 is formed at spaces 25a, 25b, 25c, 25d, and 25e surrounded by the inner wall 21a of the cylinder 21, the rotor 23, and the vanes 4. A shaft 26 formed integrally with the rotor 23 is rotatably supported ~~by means of~~ about an axis. The cylinder 21 has an intake 27, through which an operating fluid is forced to flow into the operating chamber 25, and a first discharge port 28 and a second discharge port 29 for flowing the operating fluid out from the operating chamber 25 are formed in the cylinder 21. Assuming that the number of the vanes 24 is n, the first discharge port 28 is formed at a position of $\{180 \times (1+1/n)\}$ degrees from the small clearance (a position where the clearance defined between the rotor 23 and the inner wall 21a of the cylinder becomes smallest)

22 in a direction where the shaft 26 rotates, as indicated by an arrow. In FIG. 1, the discharge port 28 is positioned at 225 degrees because the number of the vanes 24 is four. In addition, the first discharge port 28 is provided with a valve mechanism comprising a [[lead]] reed valve 30a and a valve stop 30b incorporated. The second discharge port 29 has been formed in the vicinity of the small clearance 22 and has such a shape that its part contains an area from the small clearance 22 to a position of 315 degrees in the direction where the shaft 26 rotates with no valve mechanism. Note that the position of the second discharge port 29 is not limited to those as described above and such a configuration is accepted that a central angle defined around the shaft 26 on the inner wall 21a of the cylinder 21 between the first and second discharge ports 28 and 29 is smaller than or equal to (360/n) degrees assuming that the number of the vanes 24 is n and the second discharge port 29 contains an area in the vicinity of the small clearance 22.

Pages 12 and 13, paragraph bridging same:

The intake 27 is formed at a position where a relational equation (2) is established between the volume Vb of the space 25b, where the operating chamber 25 is situated at the end of the suction process and the volume Vc of the space 25c, where the operating chamber 25 is situated when reaching its maximum volume, using the maximum value Rmax for an expansion ratio expected for the system in which the expander is incorporated and ~~a diabetic~~ an adiabatic coefficient κ for the operating fluid.

Pages 14-16, paragraph bridging same:

At this point corresponding to C in FIG. 2, overexpansion occurs where the pressure Pc applied to the operating chamber 25 is lower than the discharge pressure Pd. As soon as the rotor 23 moves by a small distance, the operating chamber 25 situated in the space 25c communicates to the first discharge port 28. At that time, if no [[lead]] reed valve 30a has been attached to the first discharge port 28, the operating fluid flows into the operating chamber 25 from the discharge chamber 33 under the pressure Pd and the pressure applied to the operating chamber 25 increases up to Pd from Pc while the volume of the operating chamber 25 remains constant, namely Vc. As shown in FIG. 2, the process proceeds from C to H. On the other hand, since the vane rotary expander according to the present embodiment incorporates the [[lead]] reed valve 30a attached to the first discharge port 28, and the [[lead]] reed valve 30a closes the first discharge port 28 by means of a difference between the pressure Pd applied the discharge chamber 33 and the pressure Pc applied to the operating chamber 25, the operating fluid is prevented from flowing from the discharge chamber 33 into the operating chamber 25. Then, the operating chamber 25 decreases its volume as the rotor 23 rotates, while compression occurs in the operating chamber 25 because the first discharge port 28 is closed by the [[lead]] reed valve 30a and the pressure increases following the C-B line in FIG. 2 again. As soon as the pressure applied to the operating chamber 25 exceeds Pd, namely at the point I shown in FIG. 2, the [[lead]] reed valve 30a opens for the first time. The process represented by a C-I line is referred to as a recompression process. Thereafter, the operating chamber 25 performs a process for discharging the operating fluid under the pressure Pd on the low pressure side out from the first discharge port 28 while decreasing its volume as the rotor 23 rotates, namely a discharging process. In the discharging process, a communication to the first discharge port 28 is shut off while the operating chamber 25 moves from the space 25d to the space 25e. However, the operating fluid is discharged continuously from

the operating chamber 25 through the second discharge port 29 because the second discharge port 29 has such a shape that its part contains a position of 315 degrees from the small clearance 22 in the direction where the shaft 26 rotates, namely a position of (360/n) degrees, an interval of the vanes 24, apart circumferentially from the first discharge port 28 assuming that the number of the vanes 24 is n. The discharging process is represented by an I-J line in FIG. 2.

Page 17, first and second paragraphs:

In addition, by attaching the valve mechanism comprising the [[lead]] reed valve 30a and the valve stop 30b to the first discharge port 28, the operating fluid is prevented from flowing into the operating chamber 25 from the discharge chamber 33 in the overexpansion process and recompression to the discharge pressure Pd is performed, providing a high-efficiency vane rotary expander without a loss due to expansion (corresponding to an area IHC shown in FIG. 2), which has been found in the conventional vane rotary expanders.

Moreover, since the valve mechanism comprising the [[lead]] reed valve 30a and the valve stop 30b may be attached only to the first discharge port 28 and not to the second discharge port 29, a high-efficiency vane rotary expander is provided at a lower cost.

Pages 18-20, paragraph bridging same:

FIG. 3 is a transverse sectional view of a vane rotary expander according to a second embodiment of the present invention. The reference numeral 41 denotes a cylinder having a cylindrical inner wall 41a and side plates at its top and bottom ends

(not illustrated in the figure). Inside of the cylinder 41, a cylindrical rotor 43 is disposed, and an outer circumferential segment of the cylindrical rotor 43 defines a small clearance 42 together with the inner wall 41a of the cylinder 41. The rotor 43 has grooves 43a formed perpendicularly to its top and bottom end surfaces at an interval of 60 degrees. Vanes 44 are inserted into the grooves 43a at the respective ends thereof so as to be freely slidable, and the other ends of the vanes 44 are in contact with the inner wall 41a of the cylinder 41. An operating chamber 45 is formed at spaces 45a, 45b, 45c, 45d, 45e, 45f, and 45g surrounded by the inner wall 41a of the cylinder 41, the rotor 43, and the vanes 44. A shaft 46 formed integrally with the rotor 43 is rotatably supported ~~by means of~~ about an axis. The cylinder 41 has an intake 47 for guiding an operating fluid into the operating chamber 45 and first, second, and third discharge ports 48, 49, and 50 for flowing the operating fluid out from the operating chamber 45. Similarly to the vane rotary expander according to the first embodiment, the first discharge port 48 is formed at a position of {180.times.(1+1/n)} degrees from the small clearance 42 in the direction where the shaft 46 rotates as indicated by an arrow assuming that the number of the vanes 44 is n. In FIG. 3, the first discharge port 48 is formed at a position of 210 degrees from the small clearance 42 because the number of the vanes 44 is six. In addition, a valve mechanism comprising a [[lead]] reed valve 51a and a valve stop 51b has been attached to the first discharge port 48. The second discharge port 49 is formed at a position of 270 degrees from the small clearance 42 and has the same type of valve mechanism comprising a [[lead]] reed valve 52a and a valve stop 52b as that of the first discharge port 48. The third discharge port 50 is formed at a position of 330 degrees with no valve mechanism. Note that the positions of the second and third discharge ports 49 and 50 are not limited to those as described above and may be formed at any position as long as the central angle defined around the shaft 46 on the inner wall 41a of the cylinder 41 among the first, second, and third discharge ports

48, 49, and 50 is smaller than or equal to (360/n) degrees assuming that the number of the vanes 44 is n and the third discharge port 50 contains an area in the vicinity of the small clearance 42.